

MULTICRITERIA METHODS IN PERFORMING COMPANIES' RESULTS USING ELECTRONIC RECRUITING, CORPORATE COMMUNICATION AND FINANCIAL RATIOS

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Abstract

Human resources represent one of the most important companies' resources responsible in creation of companies' competitive advantage. In search for the most valuable resources, companies use different methods. Lately, one of the growing methods is electronic recruiting, not only as a recruitment tool, but also as a mean of external communication. Additionally, in the process of corporate communication, companies nowadays use the electronic corporate communication as the easiest, the cheapest and the simplest form of business communication.

The aim of this paper is to investigate relationship between three groups of different criteria; including main characteristics of performed electronic recruiting, corporate communication and selected financial performances. Selected companies were ranked separately by each group of criteria by usage of multicriteria decision making method PROMETHEE II. The main idea is to research whether companies which are the highest performers by certain group of criteria obtain the similar results regarding other group of criteria or performing results.

Key words: *electronic recruiting, corporate communication, multicriteria decision making, PROMETHEE II.*

1. INTRODUCTION

Human resources represent one of the most important companies' resources responsible in creation of companies' competitive advantage. Companies are aware of the fact that human resources represent crucial factor for their business growth and creation of sustainable competitive advantage, so they need to reveal potential employees through the process of recruiting. Employers use different recruitment tools in order to attract and retain the most valuable potential employees. Majority of them still use traditional methods while lately is present significant increase of electronic recruitment. Despite certain disadvantages, electronic recruitment has many advantages in comparison to traditional methods. Former is known as a way of communication to internal and external potential employees but also as a way of communication to all stakeholders informing them about activities that those are interested to.

The aim of this paper is to investigate relationship between three groups of different criteria; including main characteristics of performed electronic recruiting, corporate communication and selected financial performances. Characteristics of electronic recruiting as well as corporate communication are result of transparent companies' information perceived on the companies' official web pages, while financial results are official data requested by standardized and obligatory financial reports.

Selected companies were ranked separately by each group of criteria. Ranking was provided by usage of multicriteria decision making method PROMETHEE II. The main idea is to research whether companies which are the highest performers by certain group of characteristics obtain the similar results regarding other group of characteristics or performing results.

2. THEORETICAL BACKGROUND

2.1. Usage of electronic recruitment vs. traditional methods of recruiting

Living and working in today's volatile and very complex business environment, it requires enterprises to generally use new business tools and techniques including new means of recruitment and corporate communications. Employers are struggling in order to provide potential employers who will become key factors of their organizational success, sustainable competitive advantage and business growth.

Recruitment represents the process of attracting a pool of qualified applicants from which candidates for vacant positions can be selected. Otherwise, it can be defined as a form that involves the initial gathering together of a pool of applicants, with the sifting out of those who fail to meet basic requirements (Bartram, 2000) in order to ensure people with unique skills, know-how and values required by companies' objectives. After the attraction of potential candidates, second stage is filtering the number down by selecting out those who fail to meet the key criteria and the process finalizes by selecting those who remain (Bartram, 2000). Potential employees can be recruited from the internal or external sources, what mostly depends on job requirements. However, in majority of cases employers use external recruitment which provides companies with possibilities to choose potential employee from greater pool of recruits, bringing fresh ideas and new working techniques to company.

Many enterprises are still using traditional search engine techniques, such as newspaper advertisement, recruitment agencies, head-hunters, job fairs or educational institutions. Nevertheless, modern and sophisticated companies prefer different recruiting methods. Lately, electronic recruitment represents a revolutionary method and has been adopted by many organizations (Bilic and Tadic, 2009). High growth of electronic recruitment is the result of many advantages it has in accordance to traditional methods, but it is also the result of the growth in the usage of Internet on the first place. Usage of Internet on private and corporate level has withdrawn dramatically cultural changes over the last decades. At the end of 20th century number of Internet users has been doubled or even tripled from year to year within developed countries (Bartram, 2000). The Internet has changed the ways both job seekers and companies think about the

recruiting function (Feldman and Klaas, 2002). Back in 2001, Capelli already reported that 90% of the Fortune 500 use some on-line recruiting (Feldman and Klaas, 2002). Also, according to HR Focus (from 2001) more than 75% of HR professionals are now using Internet job boards in addition to traditional recruiting methods (Feldman and Klaas, 2002).

Although usage of Internet and electronic recruitment raises questions of privacy and security issue (Ettinger et al 2009) as well as it excerpts discrimination issue among Internet users and non-users (Othman and Musa, 2007) it also provides many advantages over traditional recruiting methods. The first stage in attracting potential employees to electronic recruitment is visualization or perceived attractiveness of the page (Zusman and Landis, 2002). Othman and Musa (2007) explain that electronic recruitment facilitates the organization to reach the large target and bring the qualified candidates. Moreover, electronic recruitment allows employers to broaden the scope of their search, with the emphasis being put on the high-quality candidates who are mostly young, computer literate, educated employees at the worldwide level. Except higher investments in computer information system at the start, electronic recruitment reduces recruiting costs at all. Othman and Musa (2007) specify cost savings in several areas; reduced direct costs of newspaper advertisements, job fairs and head hunter fees, reduced mailing costs and reduced workload for human resource department. Additionally, it speeds the hiring process, feedback itself is much efficient and job listed can remain posted for an indefinite amount of time and can be accessed at any time (Zusman and Landis, 2002). Electronic recruitment allows individuals to gain quick and easy access to information on a wide range of job possibilities 24 hours a day, seven days a week (Feldman and Klaas, 2002). At contrary, traditional recruiting methods, for instance newspaper recruitment, provide certain constrains, mostly limiting the number of applicants on those living in the particular geographical area, while Internet recruiting benefits from national and even international candidates (Zusman and Landis, 2002).

Although electronic recruiting is sometimes more prone to job seekers that are looking for a broader scope of a job or is more extensively used in the search for junior and mid-level candidates than senior executives (Feldman and Klaas, 2002) it offers many advantages whereas speeding up the process and reducing major costs represent the most important reasons in the complex, turbulent and competitive environment. The best answer for any solution would be the comprehensive usage of traditional and modern recruiting tools. More than 75% of HR professionals are now using Internet job boards in additional to traditional recruiting methods (Othman and Musa, 2007). Electronic recruitment will not replace traditional methods but will improve them by helping them to become more successful.

2.2. Corporate communication and the world-wide web

Corporate communications is a management function that offers a framework for effective coordination of all internal and external means of communications with the overall purpose of establishing and maintaining a favorable reputation with stakeholder groups upon which the organization is dependent (Cornelissen, 2008).

Having analyzed the list of key influential stakeholders, the authors in the field of corporate communication (Argenti, 2006; Belasen, 2008; Cornelissen, 2008; Goodman, 2000, etc.) agree that corporate communication function includes the following components: investor relations, media relations, employee relations, government relations or public affairs, corporate social responsibility, marketing communication, crisis communication, corporate reputation etc.

Modern information technology is creating a new corporate communication landscape and the advent of the Internet is changing the meaning and process of corporate public relations. The new media environment needs creative new approaches to accomplishing corporate communications goals and objectives (Ihator, 2001). Corporate presentation on an official website is a modern form of corporate communication with key stakeholders and the general public. In modern society corporate management needs to establish and maintain communication with key company's stakeholders such as: customers, investors, employees, community, media, government, unions, regulators and suppliers. Building and maintaining positive and successful communications with all company's stakeholders are *raison d'être* of corporate communication function on the top management level in modern corporations. Employee relations are very important and complex part of corporate communications. Usually, employees can be company's multiple stakeholders as customers, shareholders and activists at the same time. Internal (employee or staff) communication (Cornelissen, 2008) is defined as communication with employees internally within the organization. Today's employees have values and needs that are different from those of their counterparts in earlier decades. Many employees in today's service-based economy are well-educated and have higher expectations (Argenti and Forman, 2004), so companies have changed ways how they communicate with them. The management of a modern business can decide to present its organization on a website as the easiest and cheapest form of corporate communication with all interested stakeholders and the general public (Rogosic, Ramljak and Bilic, 2008). Website can be used by transparent management to provide more information about the investor relations, media relations, customer service and employee relations etc.

Corporate communication with past, current, and future employees can be built and maintained in the two-way communications through company's website. Lately, 49% (http://www.gfk.hr/public_relations/press/press_articles/005364/index.hr.html) of Croatian population above the age of 15 uses Internet. According to that information companies can reach more than 50% of the available workforce in Croatia. During economic downturns and crisis when companies try to cut costs, electronic communications in employee relations, particularly during recruitment of new employees can be more valuable than ever before. According to results of the research undertaken on the sample of top 500 value added Croatian companies in the year 2008, strong and positive correlations between development of corporate communications function and higher value added ranking was proved. Research results confirm assumption that corporate communication function can affect organizations' results if it is practiced strategically (Bilic, 2010).

3. RESEARCH METHODOLOGY AND RESULTS

3.1. Methodology and sampling

Research for this paper has been conducted in several steps. Three groups of data were gathered in order to provide or necessary testing. Data regarding electronic recruitment and corporate communication were perceived on the companies' official websites. It included all enterprises (232) listed on the Zagreb Stock Exchange Market in July 2009. After eliminating companies that provided some technical difficulties regarding their web pages and excluding financial institutions from further research due to the reason of their specificities in classification of their financial indicators, final sample included 184 enterprises. Second step of the research included usage of the financial results requested by standardized and obligatory financial reports.

First group of criteria – electronic recruitment included following questions/aspects (existence of any link regarding human resources, existence of link for online submission, existence of link for open position, existence of link for current open position, existence of link for career development and existence of link which explains the selection process). Second group of criteria – corporate communication included following aspects/questions (existence of web page, existence of English version of Web page, existence of human resources link on home page, existence of internal search engine, existence of contact for the whole company and existence of link which informs employees about corporate culture and company values). Non existence or existence of any of the above mentioned aspects perceived value 0 or 1 to the particular company. Third group of criteria – financial reporting included following indicators (current ratio (CR), debt ratio (DR) and return on sales (ROS)). After considering all mentioned aspects, economic experts from the field of human resource management, business communication and accountancy provided weights for each question/aspect presented above.

Furthermore, in order to provide all necessary ranking PROMETHEE II method has been conducted, as an appropriate method to treat the multicriteria problem of the following type:

$$\text{Max}\{f_1(a), f_2(a), \dots, f_n(a) : a \in K\} \quad (1)$$

where K is a finite set of possible actions (here enterprises), and f_j are n criteria to be maximized. For each action $f_j(a)$ is an evaluation of this action. When we compare two actions $a, b \in K$ we must be able to express the result of this comparison in terms of preference. We, therefore, consider a preference function $P: K \times K \rightarrow [0,1]$ representing the intensity of action a with regard to action b . In practice, this preference function will be a function of the difference between the two evaluations $d = f(a) - f(b)$, and it is monotonically increasing. Six possible types (for details see Brans. J.P., Mareschal, B. (1989)) of this preference function are proposed to the decision maker. The effective choice is made interactively by the

decision maker and the analyst according to their feeling of the intensities of preference. In each case zero, one or two parameters have to be fixed:

- q is a threshold defining an indifference area;
- p is a threshold defining a strict preference area;
- s is a parameter the value of which lies between p and q .

Now, we can define a preference index:

$$\Pi(a, b) = \frac{\sum_{j=1}^n w_j P_j(a, b)}{\sum_{j=1}^n w_j}, \quad (2)$$

where w_j are weights associated with each criteria. In this paper we use ranking method for determination of weights of the criteria which we need for PROMETHEE II procedure.

Finally, for every $a \in K$, let us consider the two following outranking flows (Babic, Z. and Plazibat, N. (1998)):

- leaving flow:

$$\phi^+(a) = \sum_{b \in K} \Pi(a, b) \quad (3)$$

- entering flow:

$$\phi^-(a) = \sum_{b \in K} \Pi(b, a) \quad (4)$$

The leaving flow ϕ^+ is the measure of the outranking character of a (how a dominates all the other actions of K). Symmetrically, the entering flow ϕ^- gives the outranked character of a (how a is dominated by all the other actions). The action is better if the leaving flow is higher, and the entering flow lower. The PROMETHEE I gives a partial preorder of the set of actions in which some actions are comparable, some others are not. When the decision maker is requesting a complete ranking, the net outranking flow may be considered:

$$\phi(a) = \phi^+(a) - \phi^-(a) \quad (5)$$

and the higher the net flow the better is the action. All the actions of K are now completely ranked (PROMETHEE II).

3.2. Results

Following tables represent ranking results of the top ten enterprises regarding electronic recruitment (table 1), corporate communication (table 2) and financial indicators (table 3).

Table 1. Enterprises' ranking regarding electronic recruitment

Enterprise	Rank		
ERICSSON	1	DRVNA INDUSTRIJA SPACVA	6
PODRAVKA	1	KUTJEVO	6
INA	1	MAISTRA	6
INGRA	1	ATLAS	6
ADRIAS GRUPA	1	JADRAN	6
DUKAT	1	JADRANKAMEN	6
LANTEA	1	DURO DAKOVIC HOLDING	6
IGH	1	OPTIMA TELEKOM	7
VIRO	1	TISAK	7
ATLANTIC GRUPA	1	CHROMOS BOJE I LAKOVI	7
HUP ZAGREB	1	TEHNIKA	8
MEDIKA	2	ULJANIK	8
TEKSTILPROMET	2	LENAC	8
HOTELI CROATIA	2	TRANSADRIA	8
TLM	2	DAKOVŠTINA	8
ZVECEVO	2	KRAŠ	8
HERBOS	2	JANAF	8
KOESTLIN	2	BELJE	8
PLIVA	2	DIOKI	8
DALEKOVOD	2	IMUNOLOŠKI ZAVOD	8
TANKERKOMERC	3	DALIT CORP	8
KONZUM	4	TANG	8
TVORNICA DUHANA ZAGREB	4	SLAVONIJA MK	8
HR-HRVATSKE TELEKOMUNIKACIJE	5	DRVENJACA	8
JADRANKA DD	5	SOLARIS	8
AD PLASTIKA	5	ZITNJAK	8
PPK VALPOVO	5	JADRAN CARAPE	8
PULJANKA	5	LOŠINJSKA PLOVIDBA	9
3. MAJ	5	VIADUKT	9
HTP OREBIC	6	MAGMA	9
HOTELI AMESTRAL	6	TROKUT	9
ELEKTROMETAL	6	TANKERSKA PLOVIDBA	9
		PLAVA LAGUNA	10

Source: Authors, 2010.

It is evident that only one company (Ericsson) is present in all three tables, meaning that it belongs to top 10 performing enterprises regarding aspects of electronic recruitment, corporate communication and financial results.

According to its main activity, Ericsson belongs to global telecommunication companies which use all aspects of modern tool technologies providing its business as well as comprehensive methods and tools in

the process of recruiting and providing corporate communication. These aspects allow them to become highly perceived and valued in terms of all their stakeholders.

Table 2: Enterprises' ranking regarding corporate communication

Enterprise	Rank
ATLANTIC GRUPA	1
ERICSSON	2
MAGMA	2
SIEMENS	2
TEMPO	3
SOLARIS	3
VIRO	4
LEDO	4
PLIVA	4
JADRANKA DD	5
INGRA	6
CROATIA AIRLINES	7
ZVIJEZDA	7
DURO DAKOVIC HOLDING	7
3. MAJ	7
PODRAVKA	8
MAISTRA	8
KRAŠ	9
LANTEA	10
ISTRATURIST UMAG	10
JADROPLOV	10
DUKAT	10
TISAK	11

Source: Authors, 2010.

Table 3. Enterprises' ranking regarding financial indicators

Enterprise	Rank
TVORNICA DUHANA ZAGREB	1
HOTELI DUBROVNIK	2
ATLAS	3
ATLAS NEKRETNINE	4
RIZ-ODASILJACI	5
ERICSSON	6
ZIVOPROIZVOD	7
TURIST HOTELI	8
ADRIS GRUPA	9
HR-HRVATSKE TELEKOMUNIKACIJE	10

Source: Authors, 2010.

Mentioning above, only one company belongs to top 10, regarding all three aspects. However, providing further analysis and looking up for top ten companies simultaneously according to criteria of electronic recruitment and corporate communication, more enterprises are present in table 4.

Thirteen out of fifteen above mentioned enterprises can be described as large enterprises by the number of their employees. According to Croatian Accounting Act (regarding solely the number of employees) enterprise is defined as a large, as if it employs 250 or more employees. Large companies are usually much more developed regarding Human Resource Department and its internal organization, meaning they provide more qualitative responds in the sense of electronic recruitment and human resources at all as well as corporate communication.

Table 4. Enterprises' ranking regarding electronic recruitment and corporate communication

Enterprise	rank by 1st group of criteria	rank by 2nd group of criteria
ERICSSON	1	2
PODRAVKA	1	8
INGRA	1	6
DUKAT	1	10
LANTEA	1	10
VIRO	1	4
ATLANTIC GRUPA	1	1
PLIVA	2	4
JADRANKA DD	5	5
3. MAJ	5	7
MAISTRA	6	8
DURO DAKOVIC HOLDING	6	7
KRAŠ	8	9
SOLARIS	8	3
MAGMA	9	2

Source: Authors, 2010.

Forward testing provided results regarding Pearson's correlation coefficient and statistical significance, showing statistically significant rank correlation between the first group of criteria (electronic recruitment) and the second group criteria (corporate communication) with p-value (0,00000000012; $p < 0,5$) and medium level of correlation (cor. coefficient 0,428). This understands that all enterprises which provide excellent results regarding electronic recruitment at the same time represent excellent results regarding corporate communication. Correlations among electronic recruitment and financial indicators as well as among corporate communication and financial indicators were not found statistically significant. This approves the fact that relations among electronic recruitments and financial indicator or between corporate communication and financial indicators are not evident.

4. CONCLUSION

Majority of modern and growing companies, including Croatian ones, are aware of the fact that investment in human resources and companies' presentation toward all types of stakeholders is not comprehended as cost any more, but investment in future growth. Although modern literature suggests the usage of electronic recruitment and corporate communication in order to struggle and survive in competitive and volatile working environment, but even more to provide money and time savings, Croatian enterprises still are not entirely involved in. In order to provide enterprises' ranking, regarding three different groups of characteristics, PROMETHEE II method has been used. According to results, there is a positive correlation found between group of electronic recruitment criteria and corporate communication criteria, implying that companies that are top performers regarding electronic recruitment are simultaneously top performers regarding corporate communication. Correlation between electronic recruitment and financial indicators as well as correlation between corporate communication and financial indicators are not found statistically significant, implying there is no relation between these groups of criteria. Croatian companies still have to invest time, money but also an effort in order to attract the most valuable potential employees (electronic recruitment) and to show to all interested parties their involvement and interest for them (corporate communication).

REFERENCES

- Argenti, P. (2006), "Communications and business value: measuring the link" *Journal of business strategy*, Vol. 27, pp. 29 – 40.
- Argenti, P. and Forman, J. (2004), "The Employee Care Revolution", *Leader to Leader*, Summer, pp. 45.
- Babic, Z. and Plazibat, N. (1998), "Ranking of enterprises based on multicriterial analysis", *International Journal of Production Economics*, Vol. 56-57, pp. 29-35.
- Bartman, D. (2000), "Internet Recruitment and Selection: Kissing Frog to find Princess" *Blackwell Publishers, Ltd.* Vol. 8, pp. 261-274.
- Belasen, A., T. (2008), *The Theory and Practice of Corporate Communication: A Competing Values*, Sage Publications
- Bilic, I. (2010), „Development of Web Corporate Communications Function by Official Web Sites and Value Added Ranking: Case of Croatia“ *The Business Review Cambridge*, Vol. 15, pp.151-158.
- Bilic, I. and Tadic, I. (2009), „Electronic Recruitment as a Modern Method of Corporate Communication in Crisis: Case of Croatia“ *Economic Policy and Global Recession*, Faculty of Economics, University of Belgrade, Vol. 2., pp. 159 – 167.
- Brans. J.P. Mareschal, B. (1989), "The PROMETHEE methods for MCDM" the PROMCALC, GAIA and Bankadviser Software. Working Paper ST001224. Vrije Universiteit Brussel.
- Cornelissen, J. (2008), *Corporate Communication: A guide to theory and practice*, Sage Publications, London
- Ettinger, E. (2009), "Service-Quality of Web Recruiters: A Content Analysis, *Proceedings of the 42nd Hawaii International Conference on System Sciences – 2009*"

Feldman, D. C. and Klaas, B. S. (2002), "Internet job hunting: A field study of applicant experiences with on-line recruiting" *Human Resource Management*, Vol. 41, pp. 175-192.

Goodman, M., B. (2000), *Corporate Communications for Executives*, State University of New York Press, Albany

Ihator, A. S. (2001), "Communication style in the information age" *Corporate Communications: An International Journal*, Vol.6, pp. 199-204.

Marasović, B. (2009), "Comparison of Optimal Portfolios Selected by Multicriterial Model Using Absolute and Relative Criteria Values", *Revista Investigacion Operacional*, Vol. 30, No. 1, pp. 20-31

Marasović, B., Z. Babić, N. Tomić Plazibat (2009), "Multicriterial Model for Portfolio Optimization with Industry Evaluation and Company Evaluation", *The Business Review*, Vol. 12, No. 2, pp.63-71

Othman, R. M. and Musa, N (2007), "E-recruitment practice: Pros Vs. Cons" *Public Sector ICT Management Review*, Vol. 1, pp. 35-40.

Rogosic, A., Ramljak, B. and Bilic, I. (2008), "E-Presentation of Accounting Information", *Proceedings of the International Conference on Challenges of Economic Sciences in the 21th Century*. Institute of Economic Sciences. Belgrade, pp. 486-492.

Zusman, R. R. and Landis, R. S. (2002), "Applicant preferences for Web-based versus traditional job posting" *Computers in Human Behavior*, Vol. 18, pp. 285-296.

http://www.gfk.hr/public_relations/press/press_articles/005364/index.hr.html (retrieved December 15, 2010.)